

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

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NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY

(PCT Rule 71.1)

Date of mailing  
(day/month/year)

16.03.2005

Applicant's or agent's file reference  
BA9314PCT

## IMPORTANT NOTIFICATION

International application No. PCT/US 03/37668	International filing date (day/month/year) 20.11.2003	Priority date (day/month/year) 27.11.2002
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Applicant  
E.I. DU PONT DE NEMOURS AND COMPANY et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

#### 4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/B/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

**EEEL NOTED**

*27 May 2005*

Name and mailing address of the international  
preliminary examining authority:



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**PATENT COOPERATION TREATY**  
**PCT**  
**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)  
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>BA9314PCT</b>	<b>FOR FURTHER ACTION</b>		See Form PCT/IPEA/416
International application No. <b>PCT/US 03/37668</b>	International filing date ( <i>day/month/year</i> ) <b>20.11.2003</b>	Priority date ( <i>day/month/year</i> ) <b>27.11.2002</b>	
International Patent Classification (IPC) or national classification and IPC <b>G01N15/02</b>			
<p><b>Applicant</b>  <b>E.I. DU PONT DE NEMOURS AND COMPANY et al.</b></p>			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of 3 sheets, as follows:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</li> <li><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</li> </ul> <p>b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)), containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Box No. I Basis of the opinion</li> <li><input type="checkbox"/> Box No. II Priority</li> <li><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li><input type="checkbox"/> Box No. IV Lack of unity of invention</li> <li><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li><input type="checkbox"/> Box No. VI Certain documents cited</li> <li><input type="checkbox"/> Box No. VII Certain defects in the international application</li> <li><input type="checkbox"/> Box No. VIII Certain observations on the international application</li> </ul>			
Date of submission of the demand <b>21.06.2004</b>	Date of completion of this report <b>16.03.2005</b>		
Name and mailing address of the international preliminary examining authority:  <b>European Patent Office</b> D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer <b>Müller, T</b> Telephone No. +49 89 2399-2285		



## **INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**

International application No.  
PCT/US 03/37668

**Box No. I Basis of the report**

- With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
    - This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
      - international search (under Rules 12.3 and 23.1(b))
      - publication of the international application (under Rule 12.4)
      - international preliminary examination (under Rules 55.2 and/or 55.3)
  - With regard to the **elements\*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

**Description, Pages**

1-37 as originally filed

## **Claims, Numbers**

1-23 received on 26.01.2005 with letter of 25.01.2005

## **Drawings, Sheets**

18-88 as originally filed

- a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3.  The amendments have resulted in the cancellation of:

  - the description, pages
  - the claims, Nos.
  - the drawings, sheets/figs
  - the sequence listing (*specify*):
  - any table(s) related to sequence listing (*specify*):

4.  This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

  - the description, pages
  - the claims, Nos.
  - the drawings, sheets/figs
  - the sequence listing (*specify*):
  - any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes:	Claims	1-23
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-23
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-23
	No:	Claims	

**2. Citations and explanations (Rule 70.7):**

**see separate sheet**

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**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

Reference is made to the following documents:

- D1: EP-A-0 475 121 (BUEHLER AG) 18 March 1992 (1992-03-18)
- D2: US-A-5 917 927 (SATAKE SATORU ET AL) 29 June 1999 (1999-06-29)
- D3: WO 94/06092 A (SJOESTEDT LENNART ;SOEDERLUND PATRIK (SE); AGROVISION AB (SE); OES) 17 March 1994 (1994-03-17)
- D4: PATENT ABSTRACTS OF JAPAN vol. 1996, no. 08, 30 August 1996 (1996-08-30) & JP 08 089780 A (TOKAI CARBON CO LTD), 9 April 1996 (1996-04-09)

The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and shows in one embodiment related to figure 8A and the corresponding description (the references in parentheses applying to figure 8A of D1):

A method and a device for sorting particles comprising a particle feeder (87.1), an inclined surface having an upper inlet located adjacent to and below the exit end of the feeder, a source of illumination (115), and a CCD camera (201), that is an image receiver. An image analysis unit is adapted to detect the colour of the particles that is a composition calculator which converts reflective light image signals received from the image receiver into data indicative of particle types based on at least one optical property of the particles.

The subject-matter of claim 1 differs from this known method in that

- the proportion of at least one particle type in a mixture is calculated whereas in D1 the particles are sorted into storage containers
- the particles are fed to a smooth planar stationary surface and descend along the inclined surface through the force of gravity whereas in the embodiment of figure 8 of D1 the particles move on a conveyor belt with indentations for receiving the particles

The subject-matter of claim 1 is therefore new over the embodiment related to figure 8A of D1.

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In another embodiment of D1, as disclosed in figure 1 and the corresponding description, particles are indeed fed to a smooth planar stationary surface and descend along the inclined surface through the force of gravity. However, in that embodiment of D1 the inclined surface belongs to a preprocessing stage to identify "good" particles for further investigation and subsequent sorting and has to be regarded as the feeder. Therefore claim 1 of the present application differs from the method related to figure 1 of D1 in that

- the proportion of at least one particle type in a mixture is calculated whereas in D1 the particles are sorted into "good" particles which are further investigated and other particles falling into a funnel
- the mixture is fed from a feeder located adjacent an upper inlet end of the inclined surface and capable of being positioned at a distance no greater than the smallest dimension of the particles

The subject-matter of claim 1 is therefore new over D1 (Article 33(2) PCT).

A similar argument would apply to the corresponding independent apparatus claim 20.

The problem to be solved by the present invention may be regarded as minimizing the amount of touching particles when feeding a mixture of particles to a surface and calculating the proportion of at least one particle type based on data from optical properties or shape.

The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

D1 discloses as a solution a conveyor belt with grooves for minimizing the amount of grains touching each other and no hint is given replace that conveyor belt by an inclined surface. D2 and D3 employ also conveyor belts for feeding the particles to devices for optical investigation. D4 discloses an inclined surface (21), but granulated particles of one type only are falling onto the surface and positioning of a feeder at a distance no greater than the smallest dimension of the particles for minimizing the amount of touching grains is not hinted. Therefore the combination of

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- feeding the mixture from a feeder located adjacent an upper inlet end an inclined surface and capable of being positioned at a distance no greater than the smallest dimension of the particles
- employment of a smooth planar stationary surface where particles descend along the inclined surface through the force of gravity

is not derivable from a combination of the cited prior art documents.

A similar argument would apply to the corresponding independent apparatus claim 20.

Claims 2-19 and 21-23 are dependent on the independent claims and as such also meet the requirements of the PCT with respect to novelty and inventive step.